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SUGAR REPORTS

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MARKET REVIEW

Deliveries for United States consumption through April 1956 totaled 2,663 thousand tons or 200 thousand tons more than during the first 4 months of 1955. Deliveries during the first 19 days of May were 437 thousand tons as compared to 406 thousand tons during the same period last year. As of May 19, this year's deliveries were 231 thousand tons ahead of last year and 263 thousand tons greater than in 1954. The recent price move is responsible for part of this increased volume of deliveries, but lower invisible stocks, absence of constructively delivered sugar at the end of last year, and increased demand due to population increments had indicated a higher level of deliveries during the early months of this year as compared to last year. Stocks held by sugar users are not believed to be at a level that will retard deliveries when warm weather brings a heavier demand for products such as soft drinks and ice cream.

The 10-cent per hundred-pound advance in price quotations for refined sugar has now been made for all territories, except the Gulf region and in the northwestern States where day-to-day business is being taken at former prices. While refined sugar prices for all territories during May of 1956 averaged slightly above those prevailing in 1955, they were slightly lower than during May of 1953 and 1954.

Raw cane sugar prices at New York averaged approximately 6.04 cents per pound during May, or .09 cent higher than May 1955. Ocean freight rates from Cuba to New York increased a comparable amount. The

The average New York refined cane sugar quotation January through May this year was 8.67 cents per pound and raw sugar will average approximately 5.96, a difference of 2.71 cents per pound. During the same period last year refined averaged 8.58 and raws 5.90, a difference of 2.68 cents per pound.

Production of sugar in the domestic areas from 1956 crops is now estimated at approximately 4,740 thousand tons or 90 thousand tons more than from 1955 crops. Beet production, based on farmers intention to plant and applying the last 3-year average sugar yield factor, may show an increase of 90 thousand tons over the production of about 1,760,000 tons last year. Minor and offsetting changes are anticipated in the 1956 crops of other domestic areas.

Cuba will have available approximately 125 thousand short tons less sugar in 1956 than in the previous year. During 1955, Cuba was able to reduce carryoverstocks from 2,145 to 1,786 thousand tons, a reduction of 359 thousand tons. Production from the 1956 crop was established by the Cuban government at 5,225 thousand tons or 234 thousand tons more than the 1955 crop of 4,994 thousand tons. Production from the 1956 crop of the Philippines, our second largest foreign sugar supplier, is currently estimated at about 1,200 thousand tons as compared with 1,405 thousand tons from the previous crop.

The Foreign Agriculture Service of the Department, in a release dated May 15, 1956, estimated world sugar production of centrifugal sugar from the 1955-56 crop at 42.9 million tons, an increase of 1.6 million tons, or about 4 percent over the previous year. USSR production accounts for almost 1 million tons of this increase.

World sugar prices averaged about 3.34 cents per pound, f.a.s. Havana, during May. During the year to date, prices have averaged 3.31 cents per pound, or .06 cent higher than during January-May last year.

INTERNATIONAL SUGAR CONFERENCE

An International Sugar Conference, called by the United Nations, is meeting in New York. The conference began May 21, 1956. Article 42 (2) of the International Sugar Agreement provides that ". . . the Council shall in the third year of this Agreement examine the entire working of the Agreement, especially in regard to quotas and prices and shall take into account any amendment to the Agreement which in connection with this examination any Participating Government may propose."

The Council, desiring to put the examination on the broadest possible basis during this the third year of its life, asked the United Nations to sponsor the conference. Governments which have not adhered to the Agreement were invited to participate in the proceedings and are represented at the conference.

The Agreement has as its objectives (a) to assure supplies of sugar to importing countries and markets for sugar to exporting countries at equitable and stable prices, (b) to increase the consumption of sugar throughout the world, and (c) to maintain the purchasing power in world markets of countries or areas whose economies are largely dependent upon the production or export

of sugar by providing adequate returns to producers and by making possible the maintenance of fair standards of labor conditions and wages.

The world price of sugar is considered by the present term of the Agreement to be equitable if it is maintained within a zone of stabilized price between a minimum of 3.25 cents and a maximum of 4.35 cents, f.a.s. Cuba. Since the Agreement became effective, the price has been relatively stable, fluctuating narrowly around the minimum of that range. However, this approximate minimum level has been maintained through 20 percent reductions in the basic export quotas of the larger sugar producing countries, the maximum cuts permissible under the Agreement.

SUMMARY OF THE AMENDMENTS TO THE SUGAR ACT

H. R. 7030, a bill to amend and extend the Sugar Act of 1948, as amended, and for other purposes was introduced during the first session of the 84th Congress and was subsequently passed by the second session of that Congress on May 17, 1956. The bill was signed by the President on May 29, 1956. The Act is still to be known as the Sugar Act of 1948, as amended.

Except for the amendments to section 101, (definitions), the amended Act became effective as of January 1, 1956, and is extended through December 31, 1960. The amendments to section 101 become effective upon publication in the Federal Register of regulations implementing those amendments, or 6 months after the date of enactment, whichever occurs first.

The amendment restores to the domestic areas their historic participation in the growth of our sugar market. Beginning in 1956, market growth in excess of 8,350,000 tons shall be shared 55 percent by domestic areas and 45 percent by foreign countries. Distribution of quotas among foreign countries has been changed so that foreign countries other than Cuba and the Republic of the Philippines share to a greater extent than heretofore in market growth beginning in 1957.

The method of prorating deficits is changed slightly so that increases which domestic areas receive as a result of market growth, but which they are not able to fill, are first prorated to other domestic areas.

Other amendments provide that limitations on the entry of direct-consumption sugar within the quotas for both offshore domestic

areas and foreign countries are varied slightly to permit an increase in such allocations for offshore domestic areas and to permit those foreign countries which have relatively small quotas the convenience of shipping either raw or refined sugar to this market.

Other amendments are of an administrative or technical nature.

The Internal Revenue Code is amended to extend to June 30, 1961, the applicability of the excise tax on sugar and to provide for a refund of the import compensating tax on manufactured sugar imported for use in the distillation of alcohol, as livestock feed, or in the manufacture of livestock feed.

The amendments are summarized below.

Amendments pertaining to quotas

1. Price objective. The amendment to section 201 changes the base period for the consideration given to the relationship between wholesale price of refined sugar and the general cost of living index from January through October 1947 to 1947-49, the more generally used base period.
2. Quotas for domestic areas. Section 202 (a) of the Act was amended to restore to domestic areas the right to supply 55 percent of market growth (as indicated by consumption requirements in excess of 8,350,000 tons). The first 165,000 tons of increased quotas for domestic areas are assigned 51.5 percent to the domestic beet area and 48.5 percent to the mainland cane area; the next 20,000 and 3,000 tons are assigned to Puerto Rico and the Virgin Islands, respectively; and increases in excess of 188,000 tons are apportioned among all domestic areas on the basis of quotas then in effect for each domestic area.
3. Quotas for foreign countries. The quota for the Republic of the Philippines remains unchanged throughout the extension of the Act. Quotas for foreign countries other than the Republic of the Philippines are apportioned among such countries on the basis of amendments to section 202 (c). The amendments to that section provide: (a) Quotas accruing to such foreign countries from the apportionment of the first 8,350,000 tons of consumption requirements among all areas supplying the market are assigned 96 percent to Cuba and 4 percent to all other such foreign countries. Division of the 4 percent among foreign countries other than Cuba

and the Republic of the Philippines remains unchanged in 1956; in 1957, and each subsequent year, the 4 percent is divided as shown below:

<u>Average entries within the quota for each such foreign country during 1953-1954</u>	<u>Apportionment to each such foreign country</u>
1. Less than 1,000 tons	1. Average of entries in 1953 and 1954
2. 1,000 tons or more, but not more than 2,000 tons	2. 3,000 tons
3. More than 2,000 tons, but less than 3,000 tons	3. Average of entries in 1953 and 1954 plus 2,000 tons
4. 3,000 tons or more, but not more than 10,000 tons	4. Average of entries in 1953 and 1954
5. More than 10,000 tons	5. Balance to be divided among such countries on basis of average entries within the quota for the years 1951 through 1954

(b) The increase in quotas for foreign countries other than the Republic of the Philippines resulting from market growth in excess of 8,350,000 tons is assigned 43.2 percent to Cuba and 1.8 percent to all other such foreign countries in 1956, and 29.59 percent and 15.41 percent, respectively, in 1957 and each subsequent year.

The 1.8 percent of increase that accrues to foreign countries other than Cuba and the Republic of the Philippines in 1956 is apportioned as in the past. For 1957, and each subsequent year, the 15.41 percent of increases accruing to such foreign countries is apportioned 4.33 percent to Peru, 4.95 percent to the Dominican Republic, 5.10 percent to Mexico, and 1.03 percent to other such foreign countries whose average entries in 1953 and 1954 exceeded 1,000 tons. The 1.03 percent is apportioned among those other foreign countries on the basis of their average entries within the quota during the years 1951 through 1954. Foreign countries, each of whose average entries within the quota during the years 1953 and 1954 was 1,000 tons or less, receive

Quotas under Sugar Act of 1948, as amended in 1956 1/

	1956	1957	1958	1959	1960
	(Short tons, raw value)				
Assumed requirements	8,535,000	8,670,000	8,805,000	8,940,000	9,075,000
Total domestic areas	4,545,750	4,620,000	4,694,250	4,768,500	4,842,750
Total foreign areas	3,989,250	4,050,000	4,110,750	4,171,500	4,232,250
Philippines	980,000	980,000	980,000	980,000	980,000
Total Cuba and full duty countries	3,009,250	3,070,000	3,130,750	3,191,500	3,252,250
Cuba	2,888,880	2,903,648	2,943,594	2,983,541	3,023,488
Full duty countries	120,370	166,352	187,156	207,959	228,762
Peru	56,224	63,918	69,764	75,609	81,454
Mexico	12,394	27,579	34,464	41,349	48,234
Dominican Republic	29,892	45,321	52,003	58,686	65,368
Other countries	21,860	29,534	30,925	32,315	33,706
Nicaragua	8,472	9,837	10,613	11,387	12,162
Haiti	2,892	5,489	5,771	6,053	6,335
Costa Rica	(1,084) <u>2/</u>	3,188	3,267	3,347	3,425
Formosa	(1,114) <u>2/</u>	3,190	3,270	3,350	3,431
Netherlands	(1,123) <u>2/</u>	3,223	3,317	3,411	3,505
Panama	(1,114) <u>2/</u>	3,190	3,270	3,350	3,431
Belgium	(182) <u>2/</u>	182	182	182	182
British Guiana	(85) <u>2/</u>	85	85	85	85
Canada	(631) <u>2/</u>	631	631	631	631
Hong Kong	(3) <u>2/</u>	3	3	3	3
United Kingdom	(516) <u>2/</u>	516	516	516	516
El Salvador <u>3/</u>	4,478				

1/ 1955 requirements of 8,400,000 tons plus annual increments of 135,000 tons. 2/ Average 1953-54 charges shown for countries which do not have specific prorations in 1956. 3/ No charges against quotas since 1949.

no increase in quotas resulting from market growth.

Quotas, as provided by the amendments to sections 202 (a) and (c) under assumed consumption requirements, are shown in the accompanying tabulation.

4. Failure of foreign countries to fill quotas under specified conditions. Section 202, relating to quotas, is further amended by the addition of a new subsection (e). The amendment provides that the quota or proration for any foreign country having a quota or proration in excess of 10,000 tons, which fails by more than 10 percent to fill its quota or proration in any year during which the world price of sugar exceeds the domestic price, shall be reduced in subsequent years by an amount equal to that by which the country failed to fill its quota or proration unless the Secretary finds that such failure was due to crop disaster or force majeure or that the quota reduction would be contrary to the objectives of the Act.

5. Proration of deficits in domestic quotas. The amendment to section 204 (a) establishes methods for prorating any deficit in a domestic area quota which occurs because of inability to market that part of its quota resulting from sugar requirements in excess of 8,350,000 tons. Any such deficit is prorated to the other domestic areas alone rather than to domestic areas and Cuba. In the event that no domestic area can fill the deficit, the Secretary is directed to add such unfilled amount to the quota for Cuba. The method for prorating any deficit in the quotas for any domestic areas a which occurs because of inability to market that part of its quota resulting from sugar requirements not in excess of 8,350,000 tons remains unchanged.

6. Direct-consumption sugar limitations. The amendments to sections 207 (a) and (b) provide for increases in the direct-consumption portions of the quotas for Hawaii and Puerto Rico, respectively, in proportion to the amount by which their over-all quotas are increased under section 202 (a). Further, the change in section 207 (b) provides that increases in the direct-consumption portion of the quota for Puerto Rico may be filled with direct-consumption sugar whether or not principally of crystalline structure, but restricts to crystalline sugars the first 126,033 tons of direct-consumption sugar.

The amendment to section 207 (h) provides that beginning in 1957, any foreign country whose over-all proration is 7,000 tons or less, may fill its entire proration with either raw or direct-consumption

sugar. The amount of direct-consumption sugar permitted to enter from foreign countries (except Cuba and the Republic of the Philippines) whose over-all prorations exceed 7,000 tons is limited to 1.36 percent of consumption requirements less the quotas for domestic areas and the Republic of the Philippines.

Amendments pertaining to administrative provisions

1. Allotment of quotas or prorations. Under amendment to section 205 (a) the Secretary is authorized to consider, in addition to the factors already specified in this section, the adverse effect of drought, storm, flood, freeze, disease, insects, and other uncontrollable conditions which seriously and broadly affect a general area served by the factory or factories of any allottee when he allots an area's quota or proration.

2. Proportionate shares. (a) Section 301 (b) is amended so as to permit the marketing or processing of sugar beets or sugarcane in excess of the proportionate share for the farm when such sugar beets or sugarcane are for the production of sugar to be used for livestock feed or for the manufacture of livestock feed under regulations issued by the Secretary.

(b) The amendment to section 302 (b) contains two provisions. The first provision authorizes the Secretary, in determining proportionate shares for sugar beet and sugarcane farms, to consider, in so far as possible, the interest of producers in any local producing area whose past production has been adversely, seriously, and generally affected by abnormal and uncontrollable natural conditions. The second provision authorizes the Secretary with respect to Puerto Rico to transfer the sugarcane production record for any parcel of land to any other parcel of land owned by the same producer if such transfer is found to be in the public interest because of more economic utilization of land or water resources, soil conservation, or greater diversification of agricultural production.

3. Employment of persons pursuant to section 305.

The amendment to section 407 provides that the prohibitions of that section shall not apply to persons in field offices or other governmental agencies whose services are required pursuant to section 305 for the administration of the Act, but who do not have advance information that might aid them in investing or speculating in sugar.

4. International Sugar Agreement. A new section was numbered 411 and present sections 411 and 412 were renumbered sections 412 and 413, respectively. Section 411 authorizes the Secretary by regulation to reconcile imports of sugar from foreign countries with the Government's obligation under Article 7 of the International Sugar Agreement. Participants in that Agreement agree to limit imports from countries which do not participate in the Agreement to the level of imports from such countries as a group in any of the years 1951, 1952, and 1953. The amendment also extends the Secretary's authority to the corresponding provisions of successor agreements ratified by and with the advice and consent of the United States Senate.

Amendments pertaining to technical and related provisions.

1. Definitions of raw sugar and direct-consumption sugar. The amendments to sections 101 (d) (raw sugar) and 101 (e) (direct-consumption sugar) provide that, for quota purposes, liquid sugar from domestic areas shall be classified in accordance with the same principles by which crystalline sugars are classified.

2. Definition of total sugar content. The amendment to section 101 (i) merely deletes the parenthetical word (Clerget) from the definition. The term "Clerget" refers to an analytical method and its deletion does not affect the meaning of the term "sucrose."

3. Specific processes to be applied to sugars and specific qualities of sugar to be applied to classification. A new section, 101 (n), defines the term "to be further refined or improved in quality." It further **authorizes** the Secretary to determine, after public hearings, **whether** specific processes to which sugar may be subjected meet the requirements of the definition "to be further refined or improved in quality" and whether sugars of specific qualities are raw or direct-consumption sugar within the meaning of sections 101 (d) and (e), respectively.

4. Processing of direct-consumption sugar in excess of direct-consumption portion of a quota. An amendment to section 405 provides that any person whose sugar processing operations otherwise meet the requirements of section 101 (n), who imports sugar of direct-consumption quality under a declaration that such sugar is raw sugar, shall forfeit 1 cent per pound of such sugar in excess of the unfilled part of the direct-consumption portion of the applicable quota, proration, or allotment thereof.

Amendments pertaining to the Internal Revenue Code of 1954.

1. Definition of total sugars. Section 4502 (4) of the Internal Revenue Code is amended by deleting the parenthetical word (Clerget) as was done in section 101 (i) of the Sugar Act. Further, the amendment eliminates the reference to Customs Regulations that have since been superseded by others.

2. Import tax. Amendments to sections 4505 and 6418 (a) of the Internal Revenue Code provide that the import compensating tax on manufactured sugar imported into the United States for use in the distillation of alcohol or for livestock feed may be refunded.

3. Extension of excise and import tax. The amendment to sections 4501 (c) and 6412 (d) of the Internal Revenue Code extend the termination date of the excise and import tax on manufactured sugar to June 30, 1961.

NEW PROVISIONS OF THE SUGAR ACT WITH RESPECT TO
DEFINITIONS, REFINING PROCESSES, AND QUALITIES OF
RAW AND DIRECT-CONSUMPTION SUGARS

By

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The following presentation of data and other information relating to new definitions contained in the Sugar Act is intended to furnish persons interested therein with background material preparatory to a hearing to be held under the provisions of section 101 (n) of the Act.

It is expected that a hearing will be held in the latter part of July. Procedures to be followed in the conduct of the hearing and notices of the time and place of the hearing will be announced in the Federal Register.

Introduction

The Sugar Act of 1948, as amended, contains some revisions and new provisions with respect to the definitions of raw and direct-consumption sugar. The revised definitions provide that liquid sugar from domestic offshore areas is to be classified for quota purposes as either raw or direct-consumption sugar. The principle upon which such classification is based is the same as that applied to the classification of crystalline sugar.

A new provision with respect to the classification of all sugars defines the term "to be further refined or improved in quality." In addition, this provision authorizes the Secretary to hold hearings to determine whether specific processes to which sugars are subjected meet the requirements of the definition and whether the specific qualities of sugars are raw sugar or direct-consumption sugar within the meaning of the definitions of such terms as defined in the amended Act.

Another new provision, related in its administration to those provisions with respect to processes and sugar quality, provides for the assessment of a penalty on sugar of direct-consumption

quality entered and processed as raw sugar. The penalty is assessed on the basis of the amount of such sugar that is so entered in excess of the unfilled part of the direct-consumption portion of the applicable quota, proration, or allotment thereof. These changes in the Act provide a basis for handling some of the problems that were called to the attention of the industry in September 1954 (Sugar Industry Conference, USDA, Washington, D.C., September 15, 1954). Although the changes that have been made clarify wording to coincide with intent and provide more specific guidance for the administration of those provisions of the Act dependent upon definitions, numerous problems are likely to be encountered in connection with implementing these new provisions. The following summary is intended to present information to focus attention on problems inherent in their implementation.

Subsections 101 (d) and (e)

The revised raw and direct-consumption sugar definitions are as follows:

"(d) The term 'raw sugar' means any sugars (exclusive of liquid sugar from foreign countries having liquid sugar quotas), whether or not principally of crystalline structure, which are to be further refined or improved in quality to produce any sugars principally of crystalline structure or liquid sugar."

"(e) The term 'direct-consumption sugar' means any sugars principally of crystalline structure and any liquid sugar (exclusive of liquid sugar from foreign countries having liquid sugar quotas), which are not to be further refined or improved in quality."

Subsections 101 (d) and (e) define raw sugar and direct-consumption sugar so as to provide for the classification of liquid sugar entries from domestic offshore areas according to the principles applied to crystalline sugar. The inclusion of liquid sugar in the raw and direct-consumption sugar definitions clarifies the quota status ^{1/} of liquid sugar entries from offshore areas, both domestic and foreign. With respect to offshore domestic liquid sugar, the revised definitions in subsections 101 (d) and (e) present no problem in themselves, but in conjunction with the provisions of subsection 101 (n) some problems do arise. Although entries of liquid sugar for further processing have been made from foreign countries having liquid sugar quotas, such entries have presented no classification problem because there was no need to classify such entries as raw or direct-consumption sugar.

^{1/} Subject to the direct-consumption sugar limitation in section 207 (b).

Subsection 101 (n)

The new subsection (n) added to section 101 is as follows:

"(n) The term 'to be further refined or improved in quality' means to be subjected substantially to the processes of (1) affination or defecation, (2) clarification, and (3) further purification by adsorption or crystallization. The Secretary is authorized, after such hearing and upon such notice as he may by regulation prescribe, to determine whether specific processes to which sugars are subjected are sufficient to meet the requirements of this paragraph (n) and whether sugars of specific qualities are raw sugar within the meaning of paragraph (d) of this section, or direct-consumption sugar within the meaning of paragraph (e) of this section."

Subsection 101 (n) contains two major provisions. The first provision defines the term "to be further refined or improved in quality." The second provision authorizes the Secretary to hold hearings to determine whether specific processes meet the requirements of the definition and whether sugars of specific qualities are of raw or direct-consumption quality. Both provisions are relevant to the definitions contained in subsection 101 (d) and (e).

Refining

The term "to be further refined or improved in quality" is defined in part by outlining the processes that constitute current refining methods. The processes included in the definition may be briefly described as follows:

- (a) Affination. Affination is the process of removing molasses and other surface impurities from raw sugars principally of crystalline structure.
- (b) Defecation. Defecation is the process of treating aqueous solutions of crystalline raw sugar, raw liquid sugar, or raw sugar washings with defecating agents and heat so as to precipitate and coagulate suspended and dissolved non-sugars preparatory to clarification.
- (c) Clarification. Clarification is the process of separating coagulated, precipitated, and suspended impurities from aqueous solutions of crystalline raw sugar, raw liquid sugar, or raw sugar washings.

- (d) Adsorption. Adsorption is the process of treating aqueous solutions of raw sugar, raw liquid sugar, or raw sugar washings with adsorbents to remove dissolved nonsugars.
- (e) Crystallization. Crystallization is the process of crystallizing sugar from aqueous solutions of sugar and nonsugars.

Specific processes which may be classified under these types vary considerably in detail, but are essentially the same in principle. The variations arise from the method of refining employed, the type (crystalline or liquid) of raw material used, and the type of product produced.

Refining methods employed in the United States may be classified under three types: (1) bone char refining, (2) activated carbon refining, and (3) ion-exchange refining. At the present time, ion-exchange refining is actually supplemental to the other types of refining rather than a completely separate type. Some refineries use a combination of two or more of these types.

A typical bone char process includes affination (for crystalline sugars), defecation, clarification, adsorption, and crystallization. Activated carbon processes are essentially the same as the bone char processes, except that activated carbon rather than bone char is used as an adsorbent. Processes based on ion-exchange, although fundamentally equivalent to the other refining methods, show greater variation in the specific processes used in conjunction with ion-exchange.

Specific affination processes do not vary in any of the types of refining methods. Both the equipment and the procedures used are essentially the same regardless of differences that may exist in other parts of the refining processes.

There are many variations in specific defecation and clarification processes. These variations include differences in defecants used, equipment required, and the processes themselves. In some cases, defecation and clarification may be carried out simultaneously.

Variations in adsorption processes exist in both the adsorbent used and in its method of use. Adsorbents commonly used are bone char, activated carbon, and ion-exchange materials or a combination of those adsorbents. They may be employed in

fixed beds or in conjunction with filters. In some cases, adsorption may be employed concurrently with defecation and clarification.

Crystallization processes are essentially the same for all types of refining methods.

Grouping of processes in refining definition. Because of current refining practices, it has been necessary to group some of the refining processes on an alternative basis. Part one of the definition so groups two widely differing processes, affination and defecation. At first glance, such an arrangement appears to be illogical and awkward. In view of the fact that some refineries do not employ an affination process for treating crystalline sugars, and, more importantly, that affination processes cannot be used on liquid sugars, the alternative grouping of affination does not appear so awkward.

Similarly, adsorption and crystallization processes are grouped alternatively. Just as the starting raw material (crystalline or non-crystalline) is a consideration in the alternative grouping of affination and defecation, the finished product (crystalline or non-crystalline) is a consideration for such grouping of adsorption and crystallization. Some refined liquid sugars are produced by dissolving refined crystalline sugar, but some are produced by concentrating refined sugar liquors to the proper concentration and composition for marketing. In this case, crystallization or adsorption, depending on the product, may be looked upon as the final purification step.

Evaluation of refining processes. Although the refining definition is a general description of the processes used in refining, it does not establish a standard for evaluating the processes. Obviously, sugars are subjected to such processes for the purpose of producing a product of superior quality from a raw material of inferior quality. The subjection of any sugars to such processes without regard to improving the quality of the raw material would be unrealistic. It would appear, therefore, that an evaluation of the specific processes to which sugars are to be "subjected substantially" should include some qualitative or quantitative standard.

The inclusion of such a standard poses several problems. The standard must be of such nature as to evaluate the processes adequately for the purpose for which it is intended. It must be

one that fits into the framework of present trade practices without undue disruption technically and administratively. Furthermore, it must be designed so as to eliminate arbitrary determinations insofar as possible. In addition, the standard must be equally applicable to liquid and crystalline sugars.

Quality of raw and direct-consumption sugars.

Another provision of subsection 101 (n) relates to the application of quality factors to supplement the principle established in subsections 101 (d) and (e) for distinguishing raw from direct-consumption sugar. The use of quality factors for this purpose requires that a satisfactory quality factor, or factors, be selected and that procedures for measuring and applying the factor to specific quantities of sugar be developed.

The ideal factor would be one that satisfactorily evaluates all sugars by means of an accurate, rapid, simple, and inexpensive test and that could be expressed by a mathematical relationship to permit comparison of all sugars on the same basis. It is doubtful that such an ideal factor exists. However, there are several factors that can be considered for use in this connection.

Refiners use several criteria for evaluating raw sugar, but the purpose of the evaluation is quite different from that required under the provisions of subsection 101 (n). However, some of the chemical and physical tests used in connection with commerce and in sugar production control may be satisfactory for this purpose.

Evaluation of sugar quality by various tests. The tests most commonly applied to sugar are tests that determine: (1) polarization, (2) total sugar content, (3) invert or reducing sugar content, (4) ash content, (5) color, (6) organic nonsugar content, (7) moisture content, or (8) total solids content. It is doubtful that any of these tests alone would be a satisfactory solution to the problem for all sugars under all conditions, but certain of the tests will undoubtedly fulfill the requirements for specific sugars under well defined conditions.

The quality of sugar may be expressed in one of two ways: (1) purity (the ratio of the amount of sugar contained to the total solids contained) or (2) an expression of the amount of nonsugars contained. The quality factors referred to in the preceding paragraph are generally used to indicate sugar quality on either basis. Problems connected with both types of quality expressions are discussed briefly below.

The test most commonly applied to all types of sugar products is the polariscopic test. The direct polariscopic test, as applied to sugar, is designed not to measure quality, but to measure the percentage of sucrose content. However, in the case of crystalline sugars which contain very small amounts of water and invert sugar, the polariscope test is an indication of quality inasmuch as it indirectly measures the amount of impurities.

Several factors must be taken into consideration in connection with the use of direct polarization as a quality criterion. Both water and invert sugar are treated as impurities by the polariscopic test. The polarization of sugars which contain water is decreased in proportion to the amount of water it contains. Consequently, in applying polariscopic tests to liquid sugars and to crystalline sugars that contain excessive amounts of moisture, the amount of water contained must be taken into consideration. Invert sugar has a two-fold effect on direct polarization. It affects polarization not only because it is not sucrose, but also because it has a negative polarization on the sucrose scale. Like water, invert sugar, if present in significant amounts, must be taken into consideration in applying the polariscopic test.

In spite of these problems, the direct polariscopic test has much to recommend its use for testing those crystalline sugars that are essentially sucrose accompanied by relatively small amounts of non-sucrose solids. The polariscopic test is well established and is more widely used than any other single test. The procedures for making the test and for applying it to specific quantities of sugar are also fairly well standardized. When those procedures are carefully followed, a reasonable level of accuracy is attainable. It is rapid and simple in application. For those sugars which contain significant quantities of water or invert sugars, the polariscopic test alone is not a satisfactory test. A determination of total sugar content and total soluble solids content yields information about the quality of such sugars that is approximately comparable to a direct polariscopic test for sugars that are essentially sucrose. However, the total sugar content test treats invert sugar as sugar, whereas the polariscopic test treats it as an impurity. Also, a total sugar content determination as a percentage of total soluble solids content eliminates water in the determination, whereas it is not eliminated by the polariscopic test.

Measurement of impurities is not usually a trade practice in the type of transaction under consideration here. Occasionally,

limits on one or more impurities may be included in a special contract, but these are specified in addition to the usual criterion, polarization. Consequently, use of impurity measurement as a quality factor would add a step to current practices. Nevertheless, impurities as quality factors do warrant discussion.

The impurities (other than invert sugar and water) that are usually measured directly are ash, or mineral content, and color. Ash measurement indicates a real quantity of an impurity. Color, although measured directly, is only an indirect indication of an impurity because it is not related to specific quantity of an impurity. Organic nonsugars are not actually measured, but are determined by subtracting the total of the measured constituents (total sugars, ash, and moisture) from the total product. Since several of the tests that are required to arrive at organic nonsugars content would be satisfactory quality factors in themselves, there would be little point in using organic nonsugars as a criterion.

The ash or mineral content of sugars (except brown or soft sugars) is generally an indication of quality. Raw sugars definitely contain greater amounts of minerals than do direct-consumption sugars. There is, however, a considerable variation in the mineral content of raw sugars of comparable quality from different producing areas. Furthermore, the mineral content accounts for only a part of the total impurities present. Despite these disadvantages, ash as a quality criterion has much in its favor. Tests for measuring total ash content or several individual constituents of the total ash content have been well standardized. Some of the testing methods are rapid and simple in application and give results with a high degree of accuracy. The test is very widely used in the industry and occasionally may enter into a special contract.

Prior to the Tariff Act of 1913, color was used to distinguish raw from refined sugar for the purpose of applying tariff rates. At that time, "Dutch Standards" were used as the color standard. Since then, "Dutch Standards" have been almost completely abandoned, but vastly improved methods for determining color have been developed. In general, there is a greater measurable difference between raw and direct-consumption sugars on the basis of color than any other factor. However, the fact that color could be added to sugar in such a way as to avoid the refined sugar duty without seriously affecting the quality or acceptance of the product made it necessary to drop color as a Custom's

classification device. A similar problem would probably exist if color alone were used as a criterion to distinguish raw from direct-consumption sugar for quota purposes.

Crystalline sugar compared with liquid sugar

As indicated in the discussion of the polariscopic test, there are problems associated with a comparison of the quality of crystalline and liquid sugars. In refined granulated and sucrose type liquid sugars, invert sugar is an impurity whereas in invert type liquid sugars and invert mush, it may be a desired constituent. In liquid sugar, the water content also must be taken into consideration. Although it is a practical matter to determine the purity or total sugar content percent of total solids content with respect to liquid sugar, a similar test on crystalline sugar is not practical because it is not necessary and because appreciably more time is required to make a purity determination. Water in the amounts normally contained in crystalline sugars does not seriously affect determinations of impurities, but that contained in liquid sugar is sufficient to affect results. Consequently, it can be seen that the small amount of water contained in crystalline sugar and the large amount of water contained in liquid sugar create problems in comparing the quality of the two sugars.

Brown or soft sugars

Brown or soft sugars which are fully refined products present a problem to a limited extent. The factors that may be applied to raw and to most direct-consumption sugars for the evaluation of quality do not have the same significance when applied to brown, or soft sugar. Although the amount of nonsugars contained in a specific sugar is generally an evaluation of its quality and the extent to which nonsugars have been removed from raw sugar is an evaluation of refining processes, such criteria do not hold for brown, or soft sugars.

Brown, or soft sugars generally contain more nonsugars than the raw sugars from which they were produced. Consequently, any of the quality factors mentioned in connection with raw sugars or white, or hard direct-consumption sugars would be unsuitable for evaluating brown or soft sugars.

Although the problem with respect to brown or soft sugars may appear to be of little consequence, due recognition must be given it if ambiguities which lead to larger problems are to be avoided.

Data on Quality Factors

Availability of information on quality factors

One of the problems involved in using quality factors to supplement the use criterion to distinguish raw sugar from direct-consumption sugar is the availability of data to establish an adequate standard.

Polarization data for raw crystalline sugars are available in considerable volume both from published reports and from administrative reports collected by the Sugar Division. Similar data for direct-consumption sugars are available in limited amounts. Data for direct-consumption sugars that are available from reports submitted to the Sugar Division are subject to certain limitations. Many direct-consumption sugar entries are reported as testing 100 degrees, but an actual polariscopic test is not made. The extent of this practice is not known with certainty and, consequently, such uncertainty must be taken into consideration where direct-consumption sugar polarization data are analyzed and evaluated.

Published data with respect to other factors such as ash, color, and organic nonsugars are available to a much lesser extent than polarization data. Although such factors are usually determined by producers of raw sugar and by refiners, the data are not generally published. The limited amount of published data that is available is generally not of recent origin. Furthermore, the quantity units on which data with respect to such factors and with respect to polarization are based differ. The lack of such published information on a comparable basis makes it difficult to evaluate its use for this purpose.

So far as liquid sugar is concerned, there is no published information with regard to quality factors of the raw product, except for data on total sugar content reported to the Sugar Division. This lack of information on liquid sugar is unfortunate, inasmuch as the equating of liquid sugar quality to that of crystalline sugar is an important part of the new provisions of the Act.

Raw sugar polarization data

Table 1 shows the polarization (in 0.5 degree ranges) of 1955 raw sugars imported or brought into the continental United States from Cuba, the Philippine Islands, Hawaii, Puerto Rico, "full duty" countries as a group, and all areas combined. In addition,

Table 1. - Polarization of raw sugar entries in 1955

Polarization, sugar degrees		Number of entries	Quantities entered, short tons, raw value		Percentage	Cumulative percentage (by weight)
Range	Weighted average		total	average entry	by weight of total entries	
From All Areas						
Below 96	95.470	19	28,393	1,494	0.52	
96.0-96.499	96.315	28	72,571	2,592	1.31	1.83
96.5-96.999	96.810	154	440,725	2,862	7.99	9.82
97.0-97.499	97.280	505	1,577,348	3,123	28.59	38.41
97.5-97.999	97.700	720	2,665,277	3,702	48.31	86.72
98.0-98.499	98.190	173	558,519	3,228	10.12	96.84
98.5-98.999	98.740	46	152,435	3,314	2.76	99.60
99.0-99.499	99.070	5	21,750	4,350	.40	100.00
Total	97.555	1,650	5,517,018	3,344	100.00	
From Cuba						
Below 96	95.450	10	22,326	2,233	0.90	
96.0-96.499	96.315	19	62,359	3,282	2.50	3.40
96.5-96.999	96.805	94	306,216	3,258	12.28	15.68
97.0-97.499	97.265	263	840,883	3,197	33.72	49.40
97.5-97.999	97.715	302	906,474	3,002	36.35	85.75
98.0-98.499	98.220	69	192,147	2,785	7.70	93.45
98.5-98.999	98.745	40	141,910	3,548	5.68	99.13
99.0-99.499	99.070	5	21,750	4,350	.87	100.00
Total	97.495	802	2,494,065	3,106	100.00	
From the Philippines						
Below 96	92.440	4	142	36	0.01	
96.0-96.499						
96.5-96.999	96.870	11	34,607	3,146	3.58	3.59
97.0-97.499	97.310	95	394,961	4,157	40.81	44.40
97.5-97.999	97.680	140	520,892	3,721	53.81	98.21
98.0-98.499	98.140	8	17,354	2,169	1.79	100.00
98.5-98.999						
99.0-99.499						
Total	97.505	258	967,956	3,752	100.00	
From Hawaii						
Below 96	93.850	1	32	32		
96.0-96.499						
96.5-96.999						
97.0-97.499	97.350	13	111,168	8,551	10.87	
97.5-97.999	97.700	113	878,730	7,776	85.95	96.82
98.0-98.499	98.110	8	32,480	4,060	3.18	100.00
98.5-98.999						
99.0-99.499						
Total	97.670	135	1,022,410	7,573	100.00	
From Puerto Rico						
Below 96	95.635	4	5,893	1,473	0.62	
96.0-96.499	96.340	8	9,206	1,151	0.97	1.59
96.5-96.999	96.800	45	5,516	1,900	8.96	10.55
97.0-97.499	97.255	125	215,425	1,723	22.58	33.13
97.5-97.999	97.700	159	336,231	2,115	35.24	68.37
98.0-98.499	98.180	85	297,493	3,500	31.18	99.55
98.5-98.999	98.600	4	4,268	1,067	0.45	100.00
99.0-99.499						
Total	97.640	430	954,032	2,219	100.00	
From Full Duty Countries 1/						
Below 96						
96.0-96.499	96.440	1	1,006	1,006	1.28	
96.5-96.999	96.910	4	14,386	4,893	18.31	19.59
97.0-97.499	97.060	9	14,911	1,657	18.98	38.57
97.5-97.999	97.780	6	22,950	3,825	29.22	67.79
98.0-98.499	98.150	3	19,045	6,348	24.24	92.03
98.5-98.999	98.670	2	6,257	3,129	7.97	100.00
99.0-99.499						
Total	97.620	25	78,555	3,142	100.00	

1/ Hong Kong sugars not included.

the table shows for each polarization range the weighted average polarization, the quantity of sugar entered, the average size of each entry, and the percentage that the quantity of sugar entered in each range is of the total quantity entered.

The data, which were taken from information submitted to the Sugar Division, are based on individual entries of raw sugar. Entries varied in size from less than 100 tons to more than 13,000 tons, but averaged approximately 3,300 tons.

The data in Table 1 show that the polarization (based on units of entries) of raw sugar from all areas averaged slightly above 97.5 degrees. Almost half of the sugar entered tested between 97.5 and 97.999 degrees. Approximately 29 percent entered was in the 97.0 to 97.499 range, 10 percent in the 98.0 to 98.499 range, 8 percent in the 96.5 to 96.999 range, a little more than 1 percent in the 96.0 to 96.499 range, and approximately one-half percent each in the range below 96 and above 99 degrees.

The data for each of the areas differ from the average in several respects. Entries from Cuba and the Philippine Islands averaged slightly below the average for all areas and those from Hawaii, Puerto Rico, and "full duty" countries averaged slightly above. Although Hawaiian entries averaged the highest (97.670), none of such entries tested as high as 98.5 degrees and none of the entries from the Philippine Islands tested as high as 98.5. Most of the sugars testing between 98.5 and 98.999 were entered from Cuba, but small amounts of such sugar originated in "full duty" countries and Puerto Rico. All raw sugars testing above 99 were entered from Cuba.

Bulk entries

Although records of the Sugar Division do not specifically identify all entries of sugar shipped in bulk, those that are identifiable as such indicate that more than 20 percent of the 1955 entries of raw sugar were shipped in bulk. Bulk shipments from Hawaii accounted for approximately 80 percent of all shipments from that area and were a major portion of all bulk shipments. Those from Puerto Rico were more than 20 percent of all Puerto Rican shipments and those from Cuba were about 7 percent of Cuban entries.

Most of the bulk entries were larger than 5,000 tons and averaged more than 6,700 tons or more than twice the size of the average entry of sugar in bags.

The average polarization of sugars entering in bulk was just under 98 degrees, appreciably higher than either the average polarization of all entries or of entries of sugars in bags. Bagged sugars averaged slightly less than 97.5 degrees. Data comparing entries of raw sugar in bags with those in bulk are shown in Table 2.

Table 2.- Comparison of entries of raw sugar in bags with raw sugar in bulk

Polarization, sugar degrees		Quantity entered, short tons, raw value								Percent by weight of total entries	
		Number of entries		average							
				total		entry					
Range	weighted average		bags	bulk	bags	bulk	bags	bulk	bags	bulk	
	bags	bulk									
Below 96	95.470	--	19	0	28,393	0	1,494	0	100	0	
96.0-96.499	96.315	--	27	0	72,571	0	2,651	0	100	0	
96.5-96.999	96.310	--	150	0	440,725	0	2,842	0	100	0	
97.0-97.499	97.275	97.375	483	13	1,475,527	101,821	3,024	7,832	93.54	6.46	
97.5-97.999	97.720	97.825	607	107	1,856,061	809,216	2,855	7,563	69.64	30.36	
98.0-98.499	98.170	98.220	125	45	346,736	211,783	2,622	4,706	62.08	37.92	
98.5-98.999	98.700	98.790	32	12	80,377	72,058	2,285	6,005	52.73	47.27	
99.0-99.499	99.035	99.100	2	3	4,166	17,584	2,083	5,861	19.15	80.85	
Total	97.495	97.495	1,445	180	4,304,556	1,212,462	2,924	6,763	78.02	21.98	

It is interesting to note that as the proportion of entries in bulk increases, the polarization also increases. None of the bulk shipments tested less than 97 degrees. Less than 7 percent of the entries in the 97 to 97.499 degree range were shipped in bulk, but more than 80 percent of the entries testing above 99 degrees were so shipped.

New York Sugar Trade Laboratory reports

The New York Sugar Trade Laboratory publishes an annual report containing information relative to the polarization of sugar samples tested by the laboratory during the year. The data published by the Trade Laboratory are compared with that collected by the Sugar Division in the following tables.

<u>Polarization range</u>	New York Sugar Trade Laboratory		<u>1/</u>	<u>Sugar Division</u>	
	<u>Number of samples</u>	<u>Percent of total samples</u>		<u>Number of entries</u>	<u>Percent of total entries</u>
Below 96.0	278	1.44		19	1.15
96.0-96.99	2,568	13.46		182	11.03
97.0-97.99	12,419	64.98		1,225	74.24
98.0-98.99	3,633	19.00		219	13.27
99.0-100	215	1.12		5	.31
Total	19,113	100.00		1,650	100.00

1/ Rounded by Sugar Division.

Average Polarization from Various Areas

	<u>Cuba</u>	<u>Philippine Islands</u>	<u>Hawaii</u>	<u>Puerto Rico</u>	<u>All areas</u>
New York Sugar Trade Laboratory	97.42	97.49	97.72	97.64	97.54
Sugar Division	97.49	97.50	97.67	97.64	97.55

In general, the data from the two sources are in close agreement. The differences that do occur are partly due to the fact that Hawaiian shipments to the West Coast are not included in the Trade Laboratory data and further that the Trade Laboratory data include sugars from areas not included in the Sugar Division data. As pointed out earlier, the Sugar Division data are based on entries that vary in size from less than 100 tons to more than 13,000 tons; they average more than 3,000 tons of sugar per entry. Reports of the Trade Laboratory for other years have indicated that each sample represents approximately 2,500 bags of sugar. Depending on bag size, each sample could represent from 200 to 500 tons of sugar. In view of the difference in the quantities that each polarization represents in the two sets of data, there is a surprisingly small difference between them. These data suggest that there is a considerable degree of uniformity in polarization of the sugars in each entry, or in each cargo.

Table 3 .- Polarization of direct-consumption sugar entries in 1955, by areas

Area and polarization group	Average polarization	Number of entries	Total quantity entered	Average size of each entry
(Short tons, raw value)				
<u>Cuba</u>				
99.0-99.499	99.165	1	895	895
99.5-99.999	99.985	108	139,487	1,292
100	100.000	365	217,575	596
<u>Puerto Rico</u>				
99.0-99.499	99.400	4	2,736	684
99.5-99.999	99.770	25	9,691	388
100	100.000	181	113,061	625
<u>Hawaii</u>				
100	100.000	41	27,749	677
<u>Philippines</u>				
100	100.000	28	7,840	280
<u>Full duty countries</u>				
99.5-99.999	99.905	40	24,542	614
100	100.000	57	20,385	358
<u>Total for these areas</u>				
99.0-99.499	99.340	5	3,631	726
99.5-99.999	99.973	173	173,720	1,004
100	100.000	672	386,610	575

Direct-consumption sugar polarization

As pointed out previously, polarization data on entries of direct-consumption sugar are not as informative as that on raw sugar. Further, there is some uncertainty as to the utility of the data reported to the Sugar Division since the amount of sugar actually subjected to a polariscopic test is unknown. The data as reported are in Table 3.

Less than 12 percent of the direct-consumption sugar entries polarized in the 99.0 and 99.499 degree range. The average polarization of these entries was 99.34 degrees, 0.27 degree above the average polarization of raw sugar entries in the same range. The overlap of polarization of raw and direct-consumption sugar entries in that range represents approximately 40,000 tons of sugar, less than 1 percent of all entries. The polarization of no raw sugar entry actually exceeded the polarization of any direct-consumption sugar entry.

Total sugars content of liquid sugar entries

As previously mentioned, there is no published information with respect to the quality of liquid sugar entries from offshore areas. However, data made available from Customs' records reveal a limited amount of information with regard to the quality of such entries.

Some liquid sugar entries have been indicated to be a "raw" type and others a "refined" type 2/. The following tables show the information that is available from Customs' records for both types.

Several factors must be taken into consideration in analyzing these data. It will be recalled that Customs officials asked that a revision be made in the Internal Revenue Code to permit the use of more accurate methods for determining total sugars than the one specified. When the current Customs methods are used on liquid sugars containing substantial amounts of invert sugar, the results are generally low. Also, the total soluble solids data are taken from tables based on the specific gravity of pure sucrose solutions. Total soluble solids determination by this method is actually lower than it should be in proportion to the amount of invert sugar present. Consequently, these data are not adequate for the purpose of making a comparison of them with the polarization data.

2/ "Raw" type liquid sugars are those that have been entered for further processing on the importers' entry forms submitted to the Sugar Division; "refined" type liquid sugars are those that have not been so entered.

1955 Entries of "Raw" Liquid Sugar

	<u>Sucrose percent</u>	<u>Reducing sugar percent</u>	<u>Total sugars percent</u>	<u>Total solids percent</u>	<u>Total sugars percent of total solids</u>
	39.1	37.2	76.3	76.4	99.9
	43.3	28.2	71.5	74.5	96.0
	35.2	38.7	73.9	74.3	99.5
	36.2	39.7	75.9	76.5	99.2
	35.8	40.3	76.1	76.9	99.0
	40.0	35.1	75.1	76.1	98.7
	33.7	44.1	77.8	78.1	99.6
	39.2	35.7	74.9	76.1	98.4
	39.0	36.7	75.7	76.4	99.1
	<u>39.8</u>	<u>35.1</u>	<u>74.9</u>	<u>75.4</u>	<u>99.3</u>
Average	38.13	37.08	75.21	76.07	98.87

1955 Entries of "Refined" Liquid Sugar

	<u>Sucrose percent</u>	<u>Reducing sugar percent</u>	<u>Total sugars percent</u>	<u>Total solids percent</u>	<u>Total sugars percent of total solids</u>
	36.6	39.4	76.0	76.2	99.7
	36.9	39.1	76.0	76.3	99.6
	36.9	39.1	76.0	76.2	99.7
	36.6	39.4	76.0	76.6	99.2
	36.6	39.7	76.3	76.7	99.5
	36.0	40.0	76.0	76.5	99.3
	38.9	37.6	76.5	77.2	99.1
	35.3	41.0	76.3	76.4	99.9
	35.3	39.9	75.2	76.2	98.7
	<u>38.8</u>	<u>37.2</u>	<u>76.0</u>	<u>77.1</u>	<u>98.6</u>
Average	36.79	39.24	76.03	76.54	99.33

However, since the data on the "raw" and "refined" types of liquid sugar are on the same basis, the "purity" (total sugars percent of total soluble solids) of the two types may be compared. Although the purities of the raw type liquid sugars average appreciably below the purities of the refined type, there is considerable overlap in the data. The purity of several of the raw types would indicate that those liquid sugars are as fully refined as many of the refined type liquid sugars. Obviously, more data will be

required before a satisfactory analysis of the problem with respect to classification of liquid sugar can be made.

Nonsugars

As previously mentioned, sugar quality may also be evaluated by determining the amount of nonsugars or impurities contained. As a matter of fact, the quality of refined and other direct-consumption sugar is quite often measured in terms of impurities rather than in terms of sugar. The small variation in sugar content among such sugars is often less significant to the user than is the variation in amount and kind of impurities, even though present in small quantities.

Although impurities in sugar are determined as a matter of raw mill and refinery control, these data are usually not published. However, the published data that are readily available do give some indications of the value of such information in distinguishing raw from direct-consumption sugar. Table 4 shows the composition of raw sugars from various production areas. For comparative purposes, the average composition of a Taiwan direct-consumption sugar, white crystals, is included in the table. The Taiwan white crystals represent those types of direct-consumption sugars, the quality of which is between the fully refined types and the lower grades of turbinados. Some of the data represent only a few pounds. Some data are of recent origin and some are rather old. Although these limitations do not permit a direct comparison with the polarization data, they do afford a basis for the estimation of the utility of nonsugars as a quality factor.

Ash or minerals

The ash, or mineral, content of raw sugars is always greater than that of direct-consumption sugars (except brown or soft sugars). The ash content of the raw sugars included in Table 4 ranges from 0.16 to 0.92 percent and averages about 0.52 percent. The Taiwan white crystals average 0.07 percent ash. A gap of significant magnitude does exist in the ash content of raw and direct-consumption sugars. More information with regard to the ash content of both raw and direct-consumption sugars is needed before ash can be completely evaluated as a factor, but the data in Table 4 indicate the possibility of its use as a factor.

No data on the ash content of liquid sugar are included in the table because they are not available. If raw liquid sugars are produced from raw sugars without further processing, such liquid sugar

Table 4. - Composition of sugars (Crystalline)

Source	Polariza- tion, sugar degrees	Sucrose percent	Invert or reducing sugar percent	Ash percent	Moisture percent	Color, Stammer- degrees
<u>Hawaii</u>	96.98	96.87	0.65	0.74	0.90	52.0
raw	97.38	97.31	0.52	0.92	0.67	46.2
	<u>97.89</u>	<u>97.77</u>	<u>0.48</u>	<u>0.35</u>	<u>0.64</u>	<u>44.2</u>
av.	97.42	97.32	0.55	0.67	0.74	47.4
<u>Taiwan</u>	96.85	---	0.87	0.62	0.69	42.7
raw	96.76	---	0.69	0.70	0.71	42.7
	<u>96.78</u>	<u>---</u>	<u>0.90</u>	<u>0.45</u>	<u>0.67</u>	<u>42.7</u>
av.	96.80	---	0.82	0.59	0.69	42.7
<u>Peru</u>	97.95	---	1.29	0.29	0.43	---
raw	<u>97.45</u>	<u>---</u>	<u>0.52</u>	<u>0.46</u>	<u>0.45</u>	<u>---</u>
av.	97.70	---	0.90	0.37	0.44	---
<u>Java</u>	98.55	---	0.64	0.21	0.19	---
raw	<u>97.85</u>	<u>---</u>	<u>0.82</u>	<u>0.52</u>	<u>0.23</u>	<u>---</u>
av.	97.90	---	0.73	0.36	0.21	---
<u>Cuba</u>	97.15	---	0.78	0.31	1.03	---
raw	97.43	97.73	0.44	0.66	0.58	---
	<u>97.47</u>	<u>97.82</u>	<u>0.47</u>	<u>0.68</u>	<u>0.51</u>	<u>---</u>
av.	97.35	---	0.56	0.55	0.71	---
<u>Dom. Rep.</u>	96.25	---	1.02	0.77	1.54	----
raw	<u>96.15</u>	<u>---</u>	<u>1.53</u>	<u>0.48</u>	<u>0.85</u>	<u>---</u>
av.	96.20	---	1.28	0.62	1.20	---
<u>South Africa</u>						
raw	99.0	---	0.14	0.35	0.37	---
	98.50	---	0.22	0.16	0.43	---
	98.55	---	0.16	0.43	0.52	----
	99.35	---	0.05	0.19	0.09	---
	99.10	---	0.12	0.38	0.28	---
	<u>98.75</u>	<u>---</u>	<u>0.17</u>	<u>0.32</u>	<u>0.50</u>	<u>---</u>
av.	98.88	---	0.14	0.30	0.36	---
<u>Taiwan</u>	99.76	---	0.04	0.07	0.04	1.42
white crystal						

would be expected to contain the mineral matter contained in the raw sugar. Any intermediate processing would be expected to reduce the ash content in proportion to the amount of processing.

Color

Color is the only nonsugar other than ash that readily lends itself to use as a factor in distinguishing raw sugar from direct-consumption sugar. Very little published information that permits comparison of color with other factors is available. Although color measurements are made in connection with the production and refining of raw and direct-consumption sugars, there is little uniformity in the color methods employed or in the method of expressing color.

The few data on color in Table 4 indicate that there is a greater difference in color between raw and direct-consumption sugars than in any other factor. The magnitude of the difference in polarization is of the order of one percent; that of ash content varies from 200 to 1000 percent; but that of color is of the order of 3000 percent.

Other nonsugars

Raw sugars contain small quantities of impurities that are not separately identified. Bagasse, insoluble matter (suspensoids and sediment), microorganisms, etc., are always present in raw sugars. Their presence is one of the factors that require raw sugars to be refined. It is doubtful, however, that these types of nonsugars could be used as a factor in distinguishing raw from direct-consumption sugar.

Application of Quality Factors

Regardless of which quality factor may be selected to supplement the use criterion to distinguish raw sugar from direct-consumption sugar, the application of such factors to specific lots of sugar presents some problems. In general, application of the factors requires that the following points be taken into consideration: (1) unit to which the factor is applied, (2) sampling of the unit, (3) testing, and (4) reporting the results. Each of these presents certain problems which must necessarily be clarified for efficient and effective administration.

Unit

At the present time, quota controls are based on units of an "entry." An "entry" is not a uniform quantity of sugar. As previously pointed out, entries vary in size from less than 100 tons to more than 13,000 tons. Several questions are likely to be raised in connection with the unit to which the factors should be applied.

Should the unit be based on quantity or on some other dimension? Although quantity has much to recommend its use and must necessarily enter into the determination at some point, sugar is not generally brought into the continental United States in uniform units of quantity. Therefore, if units of quantity were selected, most shipments would involve fractional units.

The unit might be based on an identifiable lot of sugar, such as a mark or a cargo to one importer. In the case of shipments in bulk, questions would arise as to whether the unit would be the entire cargo or the sugar contained in one hold.

Obviously, the smaller the unit to which the factor is applied, the greater will be the degree of control attained. Also, the time and effort devoted to the use of the factor will increase as the number of times it is applied is increased. Consequently, the desired degree of control must be balanced against the burden of application of control.

Sugar Division data show that less than 2,000 entries of raw sugar were made in 1955. The New York Sugar Trade Laboratory report indicates that approximately 20,000 samples were tested. Assuming that both sets of data refer to essentially equal quantities of sugar, more than 10 samples were taken for each entry. Should the quality criterion be applied to units that are approximately one-tenth of an entry? Or to be more specific, what is the most practical unit of control?

Sampling

Sampling problems are closely related to the same problems connected with the unit to which control is applied. Rate of sampling depends in part on the size of the unit which is sampled. Method of sampling is also an important factor. Furthermore, consideration probably should be given to sampling and testing damaged or wet sugars and sweepings separately. Although current trade practices involve sampling rates and sampling methods, an important

question arises as to whether the present trade practices are well enough defined to be adopted for this purpose. If not, it may be necessary to develop sampling regulations.

Testing

Although all of the points referred to are important, testing is extremely so because it is the result of the test that will largely determine the quota action to be taken. Present trade practice calls for three independent tests to be made of each sample: (1) seller, (2) buyer, and (3) independent laboratory. Although the tests applied to samples are generally the most accurate part of the procedure, there are usually significant differences among the tests of the different laboratories. The accepted polarization is usually the average of the two nearest tests.

The adoption of current trade practices for control purposes does introduce a few problems. Some of the sugars entered now are not tested by an independent laboratory. However, the very nature of the controls under consideration suggests that it would be necessary to require a test by an organization that has no interest in the transaction. There is also a question as to whether the independent laboratory should be a government laboratory or a commercial laboratory. If a commercial laboratory, the question arises as to whether any commercial laboratory is acceptable or whether the laboratory has to be one that is certified or licensed in some manner. Since the volume of business is sizeable, this question could become of more than passing interest to commercial laboratories.

There are many other phases to the testing problem that have to do with the testing methods and the procedures followed in applying the tests. There are a number of tests available, but a very important thing to consider is that the test that is selected be followed uniformly. Otherwise, results are likely to be much more divergent than necessary.

Report of results.

Several problems with respect to reports to be submitted in connection with regulations pertaining to the new technical provisions of the Act undoubtedly will arise. The principal concern is to hold reporting to the minimum compatible with practicability.

Summary

In presenting this article, we have attempted to introduce problems with relevant data which may be expected to arise in connection with the implementation of the new technical provisions of the Act. For convenience, these prospective problems are outlined below:

1. Specific refining processes
 - a. Affination or defecation
 - b. Clarification
 - c. Adsorption or crystallization
2. Evaluation of refining processes
3. Specific qualities of sugars
 - a. Based on purity or nonsugars
 - b. Tests for measuring specific qualities of sugars (polarization, total sugar content, invert or reducing sugar content, ash content, color, organic nonsugar content, moisture content, total solids content).
 - c. Comparison of qualities of liquid and crystalline sugars
 - d. Application of quality tests (unit to which applied, sampling and testing of samples, and reporting results).

SUGAR ACT OF 1948 - ADMINISTRATIVE ACTIONS

Date announced

Administrative action

No administrative actions from April 26 to May 29, 1956.

STATISTICAL SERIES IN THIS ISSUEHIGHLIGHTS

1. Final data on March 1956 deliveries of sugar for United States consumption, 699,000 short tons, raw value; the previously published preliminary total for that month was 668,000 tons. April deliveries of sugar, 718,000 tons (preliminary), up 2.7 percent from previous month and up 16.0 percent from April 1955.
2. Primary distributors' stocks, April 27, 1956, 1,618,000 tons (preliminary), down 144,000 and 135,000 tons from a month ago and a year ago, respectively. During April, Refiners and importers' stocks increased 15,000 and 1,500 tons, respectively; beet processors' stocks declined 123,000 tons, and mainland sugarcane processors', 37,000 tons. Stocks of refiners and mainland sugarcane processors down 24,000 tons from this time last year; beet processors' stocks down about 88,000 tons, and importers' stocks down 23,000 tons.
3. Charges to sugar quotas, January through April, were 3,058,000 short tons. Adjusted to a comparable basis with the same period of 1955, when only reports actually received by the end of April were reflected, the January-April 1956 quota charges were 2,933,000 tons, up 232,000 tons, or 8.6 percent.
4. Shipments of sugar to 4 of the 5 geographic regions during the first quarter of 1956 were larger than during the same quarter of 1955; to New England, they were the same as a year ago. To the Middle Atlantic and Southern regions, they were 4 percent larger and to the North Central and Western regions, 10 percent larger. Shipments to the North Central and Southern regions were also larger than during the fourth quarter of 1955 by 5 and 9 percent, respectively, but to Western they were 9 percent smaller and to the New England region 6 percent smaller. To the Middle Atlantic region, shipments of sugar were about the same as in the last quarter of 1955.

Table 5.-Distribution of sugar by primary distributors in the continental United States, Puerto Rico, and Hawaii during January-March 1956 and 1955

	1956 (Short tons, raw value)	1955
<u>Continental United States</u>		
Refiners' raw	3,917	209
Refiners' refined	1,400,433	1,295,676
Beet processors' refined	404,254	396,810
Importers' direct consumption	160,601	131,685
Mainland sugarcane processors' direct-consumption	42,206 1/	29,298
Total	2,011,411	1,853,678
Deliveries for export, livestock feed, etc.	65,645 2/	10,294
For continental consumption 3/	1,945,766	1,843,384
<u>Puerto Rico</u>	24,937	14,819
<u>Hawaii</u>	11,172	9,092

1/ Deliveries for direct-consumption by mainland sugarcane processors that acquire no raw sugar from others for refining; deliveries by mainland sugarcane processor-refiners are included in deliveries by refiners.

2/ Deliveries to Commodity Credit Corporation for export 51,027; other exports, 10,714; Livestock feed, 3,904.

3/ Includes deliveries for United States Military forces at home and abroad.

Table 6.-Stocks of sugar held by primary distributors in the continental United States, March 31, 1956 and 1955

	1956 (Short tons, raw value)	1955
Refiners' raw	290,675	255,591
Refiners' refined	295,433	285,981
Beet processors' refined	1,015,246	1,074,121
Importers' direct consumption	63,183	84,710
Mainland sugarcane processors	96,921*	80,993
Total	1,761,458	1,781,396

* Stocks of sugar of mainland sugarcane processors that acquire no raw sugar from others for refining; processor-refiner stocks are included in refiners' stocks.

Table 7.-Raw sugar: Refiners' stocks, receipts, meltings and deliveries, January-March 1956 1/

	(Short tons, raw value)
Stocks, January 1, 1956	256,265
Receipts	1,477,531
Meltings	1,439,023
Deliveries for direct consumption	1,736
Deliveries for export and livestock feed	2,181
Gains and (losses), adjustments, etc.	(181)
Stocks, March 31, 1956	290,675

1/ For receipts by source of supply, see Table 12.

Source: Compiled from reports on Form SU-73 and 74

Table 8.-Refined sugar: Refiners' and beet processors' stocks, production and deliveries, January-March 1956

	Cane sugar (short tons, raw value)	Beet sugar
Stocks, January 1, 1956	268,645	1,299,794
Production from raws melted	1,426,052	0
Production direct from cane or beets	0	119,707
Imported refined receipts	2,719	0
Deliveries for continental consumption	1,389,461*	378,564
Deliveries for export and livestock feed	10,972	25,690
Gains and (losses), adjustments, etc.	(1,550)	(1)
Stocks, March 31, 1956	295,433	1,015,246

* Includes 2,967 tons of imported refined sugar

Source: Compiled from reports on Forms SU-73, SU-74 and SU-70 from cane sugar refiners and beet sugar processors, respectively.

Table 9.-Direct-consumption sugar: Importers' stocks, receipts and deliveries, January-March 1956 ^{1/}

	(short tons, raw value)
Stocks, January 1, 1956	19,235
Receipts	204,631
Deliveries for continental consumption	157,235 ^{2/}
Deliveries for export and livestock feed	3,366
Gains and (losses), adjustments, etc.	(82)
Stocks, March 31, 1956	63,183

^{1/} For receipt by source of supply, see Table 12.

^{2/} Does not include 2,967 tons imported by refiners for direct-consumption.

Source: Compiled from reports on Form SU-75 from importers of direct-consumption sugar.

Table 10.-Mainland sugarcane processors: Stocks, production and deliveries of mainland cane sugar, January-March 1956

	(short tons, raw value)
Stocks, January 1, 1956	166,715
Production	75,169
Deliveries:	
For further processing	102,748
For direct consumption	18,770
For export and livestock feed	23,436
Total	144,954
Gains and (losses), adjustments, etc.	(9)
Stocks, March 31, 1956	96,921

Source: Compiled from reports submitted by mainland sugarcane processors and processor-refiners.

Table 11.-Mainland sugar: Production and allotment charges,
March 31, 1956

	Cane sugar (short tons,	Beet sugar raw value)
Production	79,515	119,707
<u>Allotment charges</u>		
Louisiana sugarcane processors		
For further processing	117,776	
For direct-consumption	13,347	
Louisiana processor refiners	54,023	
Florida sugarcane processors	60,071	
Beet processors		378,534
Total	245,217	378,534

Source: Compiled from reports submitted by mainland sugarcane processors on Forms SU-71 and 72.

Table 12.-Refiners and importers: Receipts by source of supply
January-March 1956

Source of supply	Refiners (raw sugar) (short tons, raw value)	Importers (DC sugar) (short tons, raw value)
Cuba	718,215	135,154
Hawaii	124,251	0
Hawaii, refined	2,719*	0
Mainland cane area	108,419	0
Philippines, Republic of the	303,685	2,292
Puerto Rico	222,433	34,699
Virgin Islands	0	0
Other countries	0	32,486
Not identifiable	528	0
Total	1,480,250	204,631
Total raw sugar	1,477,531	
* Refined sugar imported by refiners.		

Table 13-Distribution of sugar by primary distributors in the continental United States, April and January-April, 1956 and 1955

	1956 1/		1955	
	April	Jan.-Apr.	April	Jan.-Apr.
	(short tons, raw value)			
Refiners	512,041	1,916,391	432,748	1,728,633
Beet processors	141,319	545,573	130,176	526,986
Importers	62,323	222,924	58,936	190,621
Mainland sugarcane processors	1,856 ^{2/}	44,062	3,237	32,535
Total	717,539	2,728,950	625,097	2,478,775
Deliveries for export, livestock feed, etc.	-	65,645	5,638	15,932
For continental consumption 3/	717,539	2,663,305	619,459	2,462,843

1/ Preliminary

2/ Estimated same as April 1955 for those processors included in 1956.

3/ Includes deliveries for U. S. military forces at home and abroad.

Table 14.-Stocks of sugar held by primary distributors in the continental United States, April 27, 1956 and April 30, 1955

	1956 1/ (short tons, raw value)	1955
Refiners' raw	309,737	327,593
Refiners' refined	291,335	290,604
Beet processors	892,032	979,511
Importers	64,664	87,794
Mainland sugarcane processors	60,000 ^{2/}	67,054
Total	1,617,768	1,752,556

1/ Preliminary

2/ Not available; estimated

Table 15.-Status of 1956 Sugar Quotas as of April 30, 1956 ^{1/}

Areas	Quota	Credit for draw- back of duty	Total	Charge to quota & offset to draw- back of duty 2/	Total	Unfilled balance
				Direct consump- tion from offshore areas 3/		Within dir- ect consump- tion limits for offshore areas
Short tons, raw value						
Domestic beet	1,800,000		516,162 4/		1,283,838	
Mainland cane	500,000		280,260 4/		219,740	
Hawaii	1,052,000		215,895	6,947	836,105	22,669
Puerto Rico	1,080,000		375,866	56,200	704,134	69,833
Virgin Islands	12,000		2,016		9,984	
Republic of the Philippines	980,000		443,986	2,333	536,014	57,587
Cuba	2,808,960	544	1,176,602	180,903	1,632,902	194,098
Other foreign countries	117,040		47,128	41,456	69,912	(1,662)
Total	8,350,000	544	3,057,915	287,839	5,292,629	342,525
Details of other foreign countries						
Dominican Republic	29,064		13,196	13,196	15,868)
El Salvador	4,355		0	0	4,355)
Haiti	2,813		2,813	0	0)
Mexico	12,051		12,044	12,044	7) (1,662) 8/
Nicaragua	8,237		2,341	2,341	5,896)
Peru	54,668		10,875	8,016	43,793)
Unspecified 5/	5,852		5,859 6/	5,859	(7) 7/)
Total	117,040		47,128 9/	41,456	69,912	

LIQUID SUGAR ^{10/}

(wine gallons of 72 percent total sugar content)

Cuba	7,970,558	5,408,568	2,561,990
Dominican Republic	830,894	0	830,894
British West Indies	300,000	0	300,000

^{1/} Excludes January-April entries of ex-quota sugar for reexport 12,811 short tons, raw value, and for livestock feed 7,337 short tons; total 20,148.

^{2/} These data include the following: (a) Domestic beet and mainland cane sugar marketed through April 30, 1956; (b) raw sugar from Hawaii and all sugar from the Republic of the Philippines and Cuba entered through April 30, 1956 as shown by quota clearance papers received in the Sugar Division by May 11, 1956; and (c) direct-consumption sugar from Hawaii, and all sugar from Puerto Rico, the Virgin Islands and "other foreign countries" entered or certified for entry as of April 30, 1956.

^{3/} Includes raw sugar for direct-consumption: Cuba, 6,877; Puerto Rico, 37; Hawaii, 52; and the Republic of the Philippines, 64; total 7,030.

^{4/} Estimated in part. ^{5/} Countries without individual prorations. ^{6/} Belgium, 241; Canada, 1,054; China (Formosa), 1,165; Colombia, 1,154; Costa Rica, 1,089; Denmark, 32; Hong Kong, 16; Netherlands, 1,108; total, 5,859. ^{7/} Applications being held pending availability of quota comprise: Belgium, 339; Colombia, 1,261; China (Formosa) 901; Netherlands, 3,421; total, 5,922. ^{8/} Nicaragua and Hong Kong sugar was entered in excess of direct-consumption limitations, under provisions of Section 207(h) of the Sugar Act of 1948, as amended. ^{9/} Charges to quotas exclude the first 10 tons entered by each country (except Canada, which entered 20 tons) under Section 212. The Federal Republic of Germany, Panama and the United Kingdom also entered 10 tons each under Section 212.

^{10/} Charges to quotas exclude 7,803 gallons by United Kingdom, 600 gallons by Australia and 500 gallons by Canada entered under Section 212.

Table 16.-Status of 1956 Sugar Quotas as of May 11, 1956 1/

Areas	Quota	Credit for draw- back of duty	Charge to quota & offset to draw- back of duty 2/			Unfilled balance Within dir- ect consump- tion limits for offshore areas
			Total	Direct consump- tion from offshore areas 3/	Total	
Short tons, raw value						
Domestic beet	1,800,000		576,162		,223,838	
Mainland cane	500,000		292,260 4/		207,740	
Hawaii	1,052,000		224,955	6,947	827,045	22,669
Puerto Rico	1,080,000		413,792	62,332	666,208	63,701
Virgin Islands	12,000		2,006		9,994	
Republic of the Philippines	980,000		449,718	2,333	530,282	57,587
Cuba	2,904,960	544	1,214,352	193,781	1,691,152	181,220
Other foreign countries	121,040		47,121	41,449	73,919	(295)
Total	8,450,000	544	3,220,366	306,842	5,230,178	324,882
Details of other foreign countries						
Dominican Republic	30,058	-	13,196	13,196	16,862)
El Salvador	4,504	-	0	0	4,504)
Haiti	2,909	-	2,813	0	96)
Mexico	12,463	-	12,038	12,038	425) (295) 8/
Nicaragua	8,518	-	2,340	2,340	6,178)
Peru	56,536	-	10,875	8,016	45,661)
Unspecified 5/	6,052	-	5,859 6/	5,859	193 7/)	
Total	121,040		47,121 9/	41,449	73,919	

LIQUID SUGAR 10/

(wine gallons of 72 percent total sugar content)			
Cuba	7,970,558	6,482,001	1,488,557
Dominican Republic	830,894	0	830,894
British West Indies	300,000	0	300,000

1/ Excludes January 1 - May 11 entries of ex-quota sugar for reexport 13,453 short tons, raw value, and for livestock feed, 7,452 short tons; total, 20,905. 2/ These data include the following: (a) Domestic beet and mainland cane sugar marketed through May 11, 1956; (b) raw sugar from Hawaii and all sugar from the Republic of the Philippines and Cuba entered through May 11, 1956 as shown by quota clearance papers received in the Sugar Division by May 11, 1956; and (c) direct-consumption sugar from Hawaii and all sugar from Puerto Rico, the Virgin Islands and "other foreign countries" entered or certified for entry as of May 11, 1956. 3/ Includes raw sugar for direct-consumption: Cuba, 8,693; Puerto Rico, 50; Hawaii, 52; and the Republic of the Philippines, 64; total, 8,859. 4/ Estimated in part. 5/ Countries without individual prorations.

6/ Belgium, 241; Canada, 1,055; China (Formosa), 1,165; Colombia, 1,154; Costa Rica, 1,089; Denmark, 32; Hong Kong, 15; Netherlands, 1,108; total, 5,859. 7/ Applications being held pending availability of quota comprise: Belgium, 339; Colombia, 1,261; China (Formosa), 901; Netherlands, 3,421; total, 5,922. 8/ Nicaraguan and Hong Kong sugar was entered in excess of direct-consumption limitations, under provisions of Section 207(h) of the Sugar Act of 1948, as amended. 9/ Charges to quotas exclude the first 10 tons entered by each country (except Canada, which entered 20 tons) under Section 212. The Federal Republic of Germany, Panama and the United Kingdom also entered 10 tons each under Section 212.

10/ Charges to quotas exclude 9,304 gallons by United Kingdom, 600 gallons by Australia and 500 gallons by Canada entered under Section 212.

Table 17.-Deliveries of Sugar by Primary Distributors by States March 1956^{1/}

State	Cane sugar refiners	Beet sugar processors	Importers of direct- consumption sugar	Mainland cane sugar mills	Total
100-pound bags, refined equivalent					
NEW ENGLAND					
CONN	88230		5840		94070
ME	51703		440		52143
MASS	411794		23642		435436
N H	24467		200		24667
R I	58891		2920		61811
VT	2328		9639		11967
TOTAL	637413		42681		680094
MID ATLANTIC					
N J	510517		69051		579568
N Y	1264154	90	206295		1470539
PENN	737313		212830	1007	951150
TOTAL	2511984	90	488176	1007	3001257
N CENTRAL					
ILL	870356	632312		14963	1517631
IND	296958	31968	3436	3	332365
IOWA	51156	111438	3085	700	166379
KAN	51578	84409			135987
MICH	203123	137021	73030		413174
MINN	43872	180902	650		225424
MO	200305	98035		700	299040
NEBR	24524	98017		600	123141
N DAK	238	26839			27077
OHIO	534662	16343	45962		596967
S DAK	1744	24561			26305
WISC	121363	107559	4000	1800	234722
TOTAL	2399879	1549404	130163	18766	4098212
SOUTHERN					
ALA	191157		1020	1976	194153
ARK	82518	6999			89517
DEL	13725				13725
D C	37864		2800		40664
FLA	112348		237167	8595	358110
GA	412640		78139		490779
KY	158231		6239		164470
LA	275856		278	2390	278524
MD	256803		43346		300149
MISS	158371			1550	159921
N C	205251		90255		295506
OKLA	76739	29145			105884
S C	117856		15272		133128
TENN	222181		2137	423	224741
TEXAS	481682	86852	25335	11	593880
VA	155835		64015	1	219851
W VA	65609		10776		76385
TOTAL	3024666	122996	576779	14946	3739387
WESTERN					
ARIZ	17651	19118			36769
CALI	442125	720585	10200		1172910
COLO	6063	66949			73012
IDAHO	2757	17091			19848
MONT	1885	24457		1	26343
NEV	4586	2895			7481
N MEX	5026	16483			21509
ORE	41426	48695	7700		97821
UTAH	5218	35003			40221
WASH	50318	83552	8975		142845
WYO	149	6775			6924
TOTAL	577204	1041603	26875	1	1645683
GRAND TOTAL	9151146	2714093	1264674	34720	13164633

1/ Includes the following Adjustments in previously published delivery data by states: January 1956 - - cane refiners Rhode Island, 14,612; Vermont (14,612), beet processors Michigan (238); February 1956 - - beet processors Michigan (297) Figures in parenthesis indicate decreases.

Table 18.-Deliveries of Sugar by Primary Distributors by States, First quarter 1956

State	Cane sugar refiners	Beet sugar processors	Importers of direct- consumption sugar	Mainland cane sugar mills	Total
<u>100-pound bags, refined equivalent</u>					
NEW ENGLAND					
CONN	280687		15835		296522
ME	147175		680		147855
MASS	1139053		56036		1195089
NH	66744		400		67144
RI	121317		7570		128887
VT	43744		26639		70383
TOTAL	1798720		107160		1905880
MID ATLANTIC					
NJ	1493496		174928		1668424
NY	3768378	90	502119		4270587
PENN	2187991		559720	1014	2748725
TOTAL	7449865	90	1236767	1014	8687736
N CENTRAL					
ILL	2306334	1608375	1000	102439	4018148
IND	777637	84129	9986	1007	872759
IOWA	147308	293499	4675	700	446182
KAN	135295	195973		1000	332268
MICH	629539	398938	145032	6000	1179509
MINN	109041	464338	975		574354
MO	603608	309616		2840	916064
NEBR	73254	259190		2400	334844
N DAK	1040	76411			77451
OHIO	1553564	66339	111078	1000	1731981
S DAK	7936	75931			83867
WISC	320893	293765	4800	15315	634773
TOTAL	6665449	4126504	277546	132701	11202200
SOUTHERN					
ALA	492168		2220	17483	511871
ARK	240612	15999			256611
DEL	34035		200		34235
D C	117331		8100		125431
FLA	313137		552213	101387	966737
GA	1058195		108313	700	1167208
KY	429527		16528	3	446058
LA	824445		278	28798	853521
MD	751670		95810		847480
MISS	445661			4760	450421
N C	623788		222924		846712
OKLA	260251	81419	80		341750
S C	337801		28260		366061
TENN	679042		3457	1038	683537
TEXAS	1436011	252355	32200	67554	1788120
VA	438927		171292	2	610221
W VA	193288	300	24521		218109
TOTAL	8675889	350073	1266396	221725	10514083
WESTERN					
ARIZ	68829	45858			114687
CALI	1229379	1653427	17200	1200	2901206
COLO	21322	203102		950	225374
IDAHO	8527	49828			58355
MONT	4047	66248		1	70296
NEV	13984	5109			19093
N MEX	22192	46221			68413
ORE	122100	141131	7700	400	271331
UTAH	15586	114352			129938
WASH	140889	249705	14217		404811
WYO	1150	23189			24339
TOTAL	1648005	2598170	39117	2551	4287843
GRAND TOTAL	26237928	7074837	2926986	357991	36597742

Table 19.—Sugar: Prices, production, and stocks

Period	Prices (Gross) 1/					
	Raw cane		Refined cane, quoted wholesale			
	N.Y. duty paid	World fas, Cuba	New York	Gulf	Chicago-West	Pacific Coast
	Cents per pound					
1949-54 annual av.	6.07	4.28	8.40	8.35	8.36	8.41
1954 annual av.	6.09	3.26	8.72	8.55	8.56	8.50
1955 annual av.	5.95	3.24	8.59	8.50	8.49	8.53
1955						
May	5.95	3.38	8.55	8.50	8.50	8.50
June	6.02	3.26	8.55	8.50	8.50	8.50
July	6.01	3.22	8.55	8.50	8.50	8.50
August	6.02	3.22	8.55	8.47	8.44	8.50
September	6.00	3.27	8.55	8.45	8.40	8.50
October	6.06	3.28	8.63	8.50	8.49	8.52
November	5.97	3.19	8.65	8.55	8.50	8.65
December	5.83	3.16	8.65	8.55	8.50	8.65
1956						
January	5.88	3.26	8.65	8.55	8.50	8.65
February	5.88	3.28	8.65	8.55	8.50	8.65
March	5.95	3.34	8.65	8.55	8.50	8.65
April	6.02	3.31	8.66	8.55	8.55	8.68
12 month av.	5.97	3.26	8.61	8.52	8.49	8.58

Period	Prices (Gross) (continued) 1/			
	Refined beet, quoted wholesale			Refined, retail
	New York (Eastern)	Chicago-West	Pacific Coast	U. S. average
	Cents per pound			
1949-54 annual av.	8.22	8.16	8.31	10.13
1954 annual av.	8.50	8.35	8.40	10.52
1955 annual av.	8.39	8.29	8.43	10.42
1955				
May	8.35	8.30	8.40	10.42
June	8.35	8.30	8.40	10.40
July	8.35	8.30	8.40	10.38
August	8.35	8.24	8.40	10.38
September	8.35	8.20	8.40	10.40
October	8.43	8.29	8.42	10.40
November	8.45	8.30	8.55	10.46
December	8.45	8.30	8.55	10.48
1956				
January	8.45	8.30	8.55	10.50
February	8.45	8.30	8.55	10.48
March	8.45	8.30	8.55	10.48
April	8.46	8.35	8.58	
12 month av.	8.41	8.29	8.48	10.43 2/

Period	Production and month-end stocks, refined			
	Production		Month-end stocks	
	Cane sugar refiners	Beet processors	Cane sugar refiners	Beet processors
	1,000 short tons, raw value			
1949-54 monthly av.	480	144	248 3/	729 3/
1954 monthly av.	475	166	254 3/	810 3/
1955 monthly av.	502	150	236 3/	860 3/
1955				
May	461	38	287	867
June	488	46	233	709
July	522	36	214	505
August	604	49	212	348
September	584	118	214	301
October	563	466	209	651
November	467	521	204	1,069
December	506	323	233	1,300
1956				
January	493	86	289	1,254
February	441	18	288	1,145
March	492	16	295	1,015
April 4/	513	18	291	892
12 month av.	511	145	247	838

1/ Quoted wholesale refined prices represent the current quotations of cane refiners and beet processors even though orders sometimes are taken on a day to day basis at a lower price. 2/ 11 month average. 3/ over-quota stocks at the end of the year included. 4/ Preliminary.